Mechelectiv

VOL. 17 MAY, 1958 NO. 6

IN THIS ISSUE:

SCHOOL OF ENGINEERING
THE GEORGE WASHINGTON UNIVERSITY

MAY 1958

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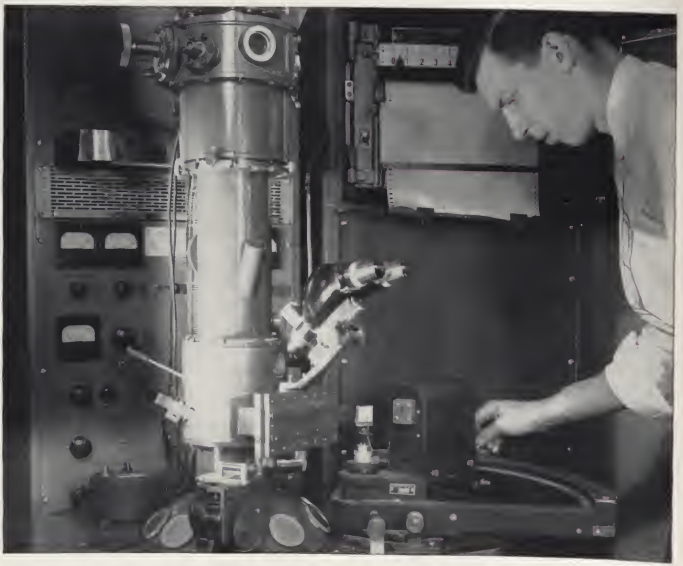

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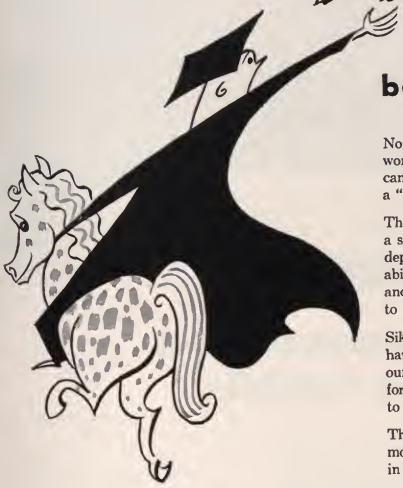

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Mechelectiv

VOL. 17 MAY, 1958 NO. 6

SCHOOL OF ENGINEERING, THE GEORGE WASHINGTON UNIVERSITY

In This Issue:

ARTICLES

DEPARTMENTS

ON OUR COVER

A United States Air Force TM-76 Martin Mace is launched at the Holloman Air Force Base Missile Development Center. The Mace uses either ATRAN or Inertial Guidance, both of which are completely self-contained and require no ground contact.

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CHANGE OF ADDRESS: Send your new address at least 30 days before the date of the issue with which it is to take effect.

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Alumni Editorial

WHERE DO WE GO FROM HERE?

Yes! Where do we go from here? That's a good question. This year, the new Executive Committee of the Engineering Alumni Association had some rather ambitious ideas about stirring up a little interest among the alumni. Dues notices were mailed out at the beginning of the school year to 1,600 alumni. One hundred and ninety-five (195) replied with cash donations for a total of $330. The bill for printing and mailing the notices was $85.66, leaving $244.34 to the year's activities—not much to work with, is it?

The next item on the program was the annual fund drive. Last year, Engineering Alumni donated $2,465 for an average individual gift of $10.52. This year so far, graduates of the Engineering School have contributed only $1,725 for an individual average of $13.55. So, it doesn't look as if much equipment will be furnished for the school this year. Last year 228 engineers made their contribution to the school that gave them their education; this year, the contribution dropped to 139. A considerable number had agreed to donate something but as soon as the pressure was off, the matter was forgotten.

Now, for a look on the brighter side of the picture. The Frank Howard Lecture, so long forgotten, was revived, with Rear Admiral Rawson Bennett, the Chief of Naval Research, invited to speak. He accepted the invitation and presented a very interesting and informal talk on the "Role of the Engineer in the Space Age," Thursday, May 8, in the Lisner Lounge. Prior to his lecture, four outstanding young engineers were presented with honorary life memberships in the Engineering Alumni Association.

On May 15th, the alums entertained the graduating engineers at a reception at the National Press Club. This was a successful affair as far as the new graduates were concerned but very few alumni were present.

As you can see, it was a grim year financially. Socially, it wasn't too bad; it could have been better.

What is the answer? What can be done to stimulate a little spirit as well as that "generous feeling" in our alums?

Programs can be planned; but cold hard cash is required to finance them and participation by people is required to make them of value. It is hoped that the die has been cast this year and the programs initiated or revived will continue and be improved upon. It is also hoped that all graduates of the School of Engineering will reconsider their obligations to their alma mater and contribute something, even though it is a small amount, to help support the various programs of the school and its alumni association.

The successes that have been enjoyed this year, although small, have been largely due to the untiring work and cooperation of the Executive Staff, Herb Rosen, Vice President; Tony Lane, Treasurer; Jack Crenca, Secretary; Frank Mitchell, Advisory Board, and Tom Brown of the General Alumni Office. Sam Mawhood compiled statistics on the past use of donations and prepared a letter containing this information which was mailed to all alumni.

Where we go from here is now up to you, the men and women who earned their diplomas at the George Washington University School of Engineering. Your financial assistance will insure progress in furnishing the laboratories with up-to-date training aids and equipment. Your active participation in alumni affairs will impart spirit in the undergraduates and motivate them to follow in your footsteps after graduation.

I wish to thank you all for the assistance and support that the staff and I received this year. It is sincerely hoped that this spirit of cooperation will be fanned from a feeble spark into a flame of active participation in the succeeding years.

Fraternally,

AL MOE, Engineering Alumni Association

WHAT'S WRONG WITH OUR ENGINEERS?

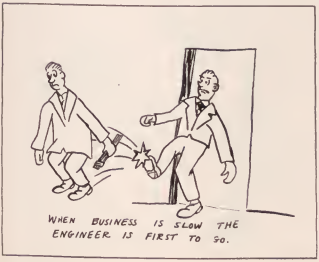
By LESTER C. KREISA, B.M.E. '58

Americans and their allies are suddenly clamoring about "slow technical progress" in comparison to the Russian success with satellites. Our record-breaking free enterprise system has progressed into many innovations such as computer-controlled automation, nuclear power and supersonic forms of flight. Scientists have been producing more discoveries almost every day for our engineers to develop. The engineers are re-designing and changing equipment at a rapid pace. Are they behind their Russian equivalents? Reports on engineers fluctuate between shortage and no shortage. Suspicion is aroused concerning our engineers' professional standing, income, education methods, and career attraction for students.

Engineering progress should be considered for all fields. We have powerful, luxurious cars and automatic machinery to produce them. This does not dull the impact of new Russian advances in guided missiles. But the ingenuity behind cars and thousands of other items should bolster confidence in our engineering prowess. A dictatorship can often surpass free enterprise in developing specific projects. Hitler concentrated the German effort on machines of war and produced history's most formidable force. In like manner, the Russian effort is regulated to concentrate on scientific and engineering projects. Thus it produced a satellite while domestic work was delayed. In our system, practically all development is done outside the government. Large corporations and university laboratories with their research facilities strive to stay ahead in their own interests and are recruited to pursue advancements in government projects. We may not have launched a satellite as soon as the Russians but there have appeared in periodicals, announcements of a wide variety of missiles which are in production. Yankee ingenuity does not put all eggs in one basket and we should never let one incident alter our confidence. We live luxuriously. The luxury is founded on technical progress and substantiates our great diversified capacity. A researcher recently discovered it was fruitless to compare Russian and American shipping methods. The complications of sending an automatic washing machine from Moscow to another city forced abandonment of the project. The "face-saving" answer was that there probably wasn't a washing machine in Moscow anyhow. We do and will adjust our research schedules as needed to surpass in any project in which we lag.

The stature of the engineering profession compared to that of doctors, lawyers, or ministers is slow in growth. The average engineer does not perform independently but becomes part of a large organization. He does not strongly support either unions or professional societies. He is doing what he likes and therefore is not forceful in demanding recognition, pay or other benefits. The engineer has been the expendable employee for many years. When business is slow he often is released first. Such conditions have prompted the American Society of Mechanical Engineers to launch a complete investigation of the profession. Educators of engineers have been revising both standards and courses of study to meet new requirements. The licensing of professional engineers has been tightened in practically all states. Private organizations employing engineers have introduced programs for modernizing the abilities of their staffs. These voluntary actions by engineers and associated groups should lead to better recognition and improvement of the profession.

In recent years the technological demands have caused elaborate wooing tactics in hiring young engineers. Starting salaries are higher than ever before. But the salaries of career engineers with longer service have not kept the same pace. The average income cannot compare with doctors, lawyers, or business administrators of the same length of service. A recent study of engineers, reporting there was no shortage, based its conclusions on the fact that their income has not increased in proportion to other professions and occupations. Yet another survey reported that engineers are generally satisfied with their salaries. These engineers are professionals who, modestly or not, make some of the greatest contributions to our present and future technological economy. The irony is that our students see through the fancy hiring tactics to career possibilities and often do not choose the engineering field. Why should they take the "hard" courses when they lead to lower incomes? Better engineering organization and recognition should lead to higher comparable pay as is now available in Russia.



Training and education of engineers is a two-fold problem—better quality and greater quantity. The number of students who choose the engineering profession depends on recognition and pay—as these increase, so will student numbers. The changes in courses to fit new conditions have been made gradually over the years. The need for accelerating changes has been highlighted by recent conferences of the educators themselves. The demand for more mathematics, study of computers, advancement in nuclear and electronics development means more courses which would strain the present hours scheduled. Elimination of cultural subjects to leave more

time for technical subjects can produce engineers higher in science but poor in general knowledge. The change in education methods has been too slow and we must act quickly. The Russians turned out 92,000 engineering type technicians in 1955 while the U. S. rate was 13,000. The Russian rigid 6-day schedules provide completion in 10 years compared to 12 or 14 years in the U. S. But we do not want human robots. Their efficiency cannot cope, on a broad scale, with that of the combined culture and technology we produce.

It is estimated there are 500,000 engineers in this country. This figure, whether considered "large" or "small," hides the fact that the real shortage lies in the lack of training in the latest engineering methods. Engineers who completed their education ten years ago are seriously handicapped unless they have been able to keep up with

(Please turn to page 14.)

THE BRIDE MAY BE AN ENGINEER

Article: CLIF HALL
Art Work: SALLY HALL

A few years ago students and professors registered unanimous shock at the sight of a girl in an engineering class. But times have changed, as they are noted for doing, and ponytails and bangs are invading this once strictly masculine field.

Why this intrusion upon one of man's few remaining private frontiers? We have two things to thank (or blame) for it. First, of course, there's the inevitable emancipation of woman (which will go on apace until there's nothing left for her to be emancipated from). Second (and no doubt this is the thing that is influencing the invasion most) there is a serious shortage of engineers.

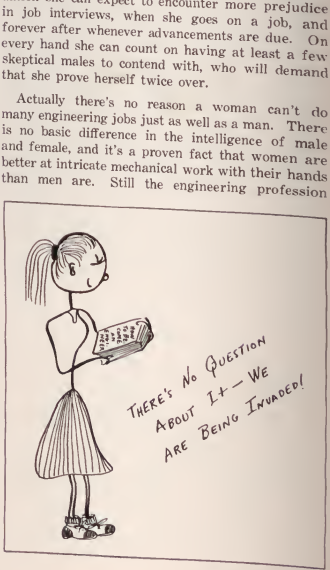
And on what can we blame the engineering shortage that has inspired the fair sex to tread upon our hallowed ground? There have been many contributing factors, all of which have been discussed so often that even the most disinterested bystander has come to know what they are. Suffice it to say that the primary causes are the rapid strides we are making in technology in this country, and the erroneous prophecy that some of our well meaning educators made after World War II. Discouraged by the gloomy picture these educators had painted of great surpluses of engineers, many earnest young men who showed aptitude for engineering were diverted to other careers.

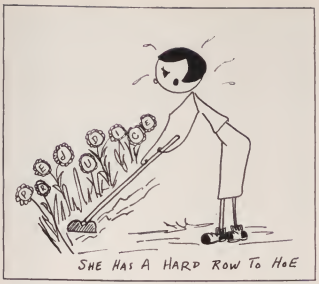
Today a crying need for engineers and the greatly increased number of "white collar" jobs open to members of the profession are attracting men like moths to a candle. Naturally it follows that a considerable number of butterflies would also come scurrying to the scene. So like it or not, boys, it's evident that the "engineeress" is here to stay—and she may very well be the answer to the engineer shortage!

However, the damsel who dares to storm our engineering portals is going to have some terrific obstacles to overcome. Not the least of these is our own hard-jawed prejudice against the infiltration of our ranks. The average engineer is going to be hard put to believe that she is dedicated to an engineering career. As a whole, we are a suspicious lot when it comes to women, and more than somewhat given to suspecting hidden motives. Despite our consuming modesty, we are not above craftily considering the possibility that they may have come to study *us*, rather than our textbooks, and this prospect both flatters and antagonizes us.

Therefore, without any doubt, the pioneer engineeress is going to have a tough row to hoe in our classrooms. And it won't end there. After graduation she can expect to encounter more prejudice in job interviews, when she goes on a job, and forever after whenever advancements are due. On every hand she can count on having at least a few skeptical males to contend with, who will demand that she prove herself twice over.

Actually there's no reason a woman can't do many engineering jobs just as well as a man. There is no basic difference in the intelligence of male and female, and it's a proven fact that women are better at intricate mechanical work with their hands than men are. Still the engineering profession

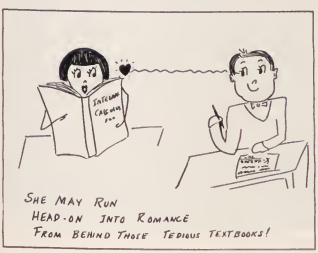




will be tougher going for the "hers" than for us "hims," if for no other reason than that we were here first.

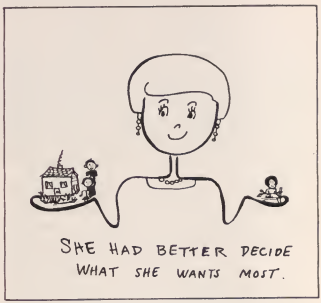
How should a girl go about breaking in upon the engineers' traditionally masculine world? She has two courses of action. One way (and we fellows feel it's the wrong way) is to become "one of the boys." She can wear mannish suits, crop her hair, learn to cuss and play poker, and otherwise imitate us. In short, she can deliberately sacrifice her femininity to gain acceptance on a buddy-buddy basis. But at best that acceptance will only be half-hearted, for she obviously isn't a male. The most she will succeed in doing is to lose her identity as a female—the worst thing that could happen to her, according to the male viewpoint.

The second course of action open to her is to be her natural self; to go on being purely feminine, and to concentrate her efforts on study and struggle—study to equip herself for a man's job, and struggle to prove to him that she can do it. But never, never should she lose sight of the fact that wifehood and motherhood are woman's highest calling, and the most rewarding of all in terms of personal happiness.



Dedicated as milady may be to concentrating her undivided attention on her engineering studies, it is quite possible that romance will meet her face-to-face in the classroom, and she will find herself in love with a "competitor." What complications in courtship may arise out of their status as rivals is anyanyone's guess.

The would-be engineeress will do well to consider all these things and ask herself a few soul-searching questions before she takes the plunge into engineering—questions like: What do I really want most out of life? Do I want a career only? Or do I want a husband and children? If I pursue an engineering career, what problems will it present in my marriage and motherhood? Should I just forget the whole thing, and concentrate on becoming a wife and mother?



If a husband and children are her real objective, and engineering studies are just a temporary fill-in until she meets the man of her choice, then she'd best do a tall bit of thinking before she goes to all the trouble of becoming an engineer.

If she decides she wants to be strictly a career woman, without family ties, chances are she may be just kidding herself. She had best make the effort to keep her femininity completely intact, just in case.

If she wants to be all three—engineer, wife and mother—she must face up to the fact that it will take all the courage, patience, endurance, and womanly wisdom she can muster to succeed. But if that's what she wants, then more power to her. Opportunity is knocking all over the U. S. A. for competent engineers.

CAMPUS NEWS

Social Festivities End School Year

The spring semester of the school year was brought to a close with several banquets, balls, and other functions. Theta Tau held their spring Banquet and Ball at the Presidential Arms on March 15. The guest speaker was Mr. Edward Baker, the first Regent of Gamma Beta Chapter. The new initiates presented a group of short skits which provided a humorous interlude between dance sessions.

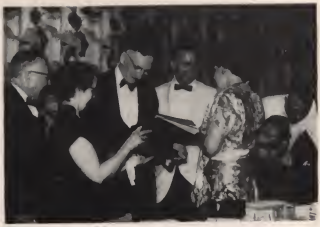
The following weekend a contingent of nine Theta Taus including Regent Ray Sullivan and Past Grand Regent "Deacon" Ames attended the regional conference at the University of Virginia in Charlottesville. The days were spent in business meetings and the evening was devoted to a banquet and an informal get-together at one of the fraternity houses. Except for having a flat tire on the way back, those attending had a thoroughly enjoyable time.

On April 16, Sigma Tau initiated its new members and installed the new officers for the coming year. General Curtis LeMay, Vice Chief of Staff for the Air Force, was presented an alumni membership on the occasion. General LeMay is a graduate of Ohio State University (B.C.E. '32) and a member of Theta Tau Fraternity. The following Saturday Sigma Tau held the spring banquet at the Dupont Plaza Hotel. The new members were given their fraternity keys by Dean Martin A. Mason, the guest speaker and an alumnus of Xi Chapter. Several of the new initiates gave talks on technical papers written for part of the pledging duties.

On Thursday, May 8, the annual Frank Howard Lecture was presented under the sponsorship of the Engineering Alumni Association. The guest speaker was Rear Admiral Rawson Bennett, Chief of Naval Research. Admiral Bennett spoke on the "Role of Engineering in the Space Age."

Delegates and guests at the 1958 Theta Tau Regional Conference at the University of Virginia.

"Deacon" Ames displaying souvenir from Ceylon at Sigma Tau banquet.



Prof. and Mrs. Fox, Prof. Cruickshanks, Vince Rider, and Mrs. Cruickshanks inspecting memento book presented to Prof. Cruickshanks.

Calling space an "engineering challenge" Admiral Bennett outlined areas of engineering that must be conquered before man can say he has conquered space. These areas include problems of high-speed flight, high-temperature metals, microminiaturization of instruments, propellants, and systems reliability. He urged engineers to "keep an eye out for the unconventional solution" which he felt would solve more tough problems than any textbook approach.

Four engineering seniors were honored the same night in recognition of their outstanding scholastic ability and leadership in student affairs. One student was selected from each of the C.E., E.E., M.E., and B.S.E. departments. The students honored by being awarded lifetime memberships in the Engineering Alumni Association were Robert Reining, Irvin Schick, Gerald Renton, and Ronald Kransdorf.

The big event of the Engineers' social year, the Engineers' Banquet and Ball, was held on May 10 in the Cotillion Room of the Presidential Arms. The guest speaker for the evening was Dean Martin A. Mason, who described with trenchant witticisms several general types of students and faculty members he has discovered in his years as a faculty member and as Dean of the School of Engineering. At the end of his talk Dean Mason shifted from his humorous caricaturing to pay tribute to Professor Benjamin C. Cruickshanks, who is retiring as Executive Officer of the M. E. Department.

Numerous awards were presented during the evening with Frank "Bud" Ryerson, chairman of the Ball and Banquet Committee, acting as toastmaster. The A.S.M.E. Award was presented to J. Richard Houghton by president John Cannon. This award is for writing the best paper in a contest sponsored by the local A.S.M.E. student group. The Sigma Tau Freshman Award, given annually to the student who had the highest Q.P.I. in the freshman

Conscientious card players at Theta Tau beer bust.

University Trustee Davis and Deans Colclough and Mason at graduating seniors' party.

Engineers' Council President Vince Rider and Past Presidents Tony Lane and Jerry Renton checking off seniors entering cocktail party.

Professor Cruickshanks telling Tony Lane and Vince Rider what he intends to do with his spare time.

class of the preceding year, was presented to James Joyce by incoming Sigma Tau president Terrell Birch. *Mecheleciv* keys and Engineers' Council keys were presented to members of the '57-'58 magazine staff and council.

The '58-'59 Engineers' Council election results were announced and the winners introduced. The senior class representatives will be Jack O'Neale and Ray Sullivan; junior class representatives, Steve Dietz and Ray Howland; sophomore class representatives, Don Bragg and Herb Wilkinson; graduate school representatives, Jim Cauffman and Chuck Hunter; Theta Tau, Woody Everett; Sigma Tau, Jim Lear; A.I.E.E., Pat Cudmore; I.R.E., Jerry Cornelius; A.S.C.E., Steve Zilliacus; A.S.M.E., Dick Stevens; *Mecheleciv*, Tom Coleman; and Davis-Hodgkins House Manager, Ralph DeLalla.

In the special awards section of the program, Dean Mason gave a gavel to Vince Rider, who is finishing his term as Engineers' Council President, and Jack O'Neale gave a gavel to Ray Sullivan, his predecessor as Regent of Theta Tau. John Cannon was presented with a certificate by Prof. Cruickshanks in recognition of his being the student who has done the most for the Student Chapter of A.S.M.E. the past year.

Lastly, Professor Cruickshanks, who is semi-retiring this year, was presented with several gifts. Sigma Tau gave him a 35 millimeter camera and the students of the School of Engineering gave him a portable television set which was paid for by contributions from individual students. The most interesting gift he received was a bound book containing messages to "Benny" from his students and

A. S. M. E. President Cannon assisting headwaiter at cocktail party.

Alumnus Leon King shows 1958 graduates the key to success in the business world.

Look at these hungry seniors putting away the food.

colleagues, and pictures of student groups of this year and bygone years. The book was a project which Engineers' Council President Vince Rider had been working on for the past year, and although most of Prof. Cruickshanks' past and present students were contacted through use of the *Mechelecivi* addresses, the project was kept secret until the book was presented. Professor Cruickshanks made a short speech thanking the groups for their gifts, and on its completion was given a standing ovation by all present.

On May 13, the graduating seniors were treated to a cocktail party by the Engineering Alumni Association. The party was held at the National Press Club and was very well attended despite the close proximity to final examinations. The buffet and bar were pretty well depleted by the time the last student and alumnus left. Thus, except for the more formal ceremonies remaining for the graduating seniors, the '57-'58 school year was brought to an end.

The remnants of the cocktail party. All alumni.

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1958 - 1959

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Secretary—John Roberts
Treasurer—Dirse Sallet
Council Rep.—Dick Stevens

WHAT'S WRONG WITH OUR ENGINEERS?

(Continued from page 7.)

the latest design methods and advancements. Perhaps here lies our greatest weakness. A recent west coast newspaper want ad for engineers headlined, "Do you have a working knowledge of the Laplace Transform?" This is not the conventional solution to differential equations and until recently was not part of undergraduate engineering courses. Now this and other higher mathematical methods are required for applications to new machinery and systems designs. We need more engineers with this know-how. Training for older engineers is one suggested procedure for combating shortage. More prestige and recognition will help bring in the young who have talents to cope with the problems. Also, we must relieve the engineer of routine tasks and make more use of technicians as is done in the medical profession. One suggestion has been to remove engineers from administration. But who is best qualified to coordinate technical programs? The engineers should be given the recognition and responsibilities of management. Better pay alone is not always the best inducement to the profession. Better working conditions also help retain capable engineers who have been leaving the field. The present methods of keeping engineers abreast with the latest improvements and changes in the field should be improved and emphasized to insure our technological advancement.

Recent slow-downs in Defense Department procurements due to budget limitations were necessary. This precipitated news stories that the engineer shortage "bubble had burst." Some contractors, particularly in aircraft, released large numbers of engineers from their payroll. Such propaganda tends to increase the apathy of the American people. The Department of Labor has reported that the need for engineers, scientists, and technicians continues to grow. We must not allow technical superiority to be vested in other nations whose motives threaten our way of life. Fortunately, the satellites have provided a spur for action. This is better than the jarring shock to the nation like that which occurred on December 7, 1941. One Russian ripple of technology is ahead but the massive wave of American advancement will predominate. The engineers, in cooperation with educators, can improve their ability and revise the standards of the profession. Recognition, respect, income and the attraction for students will follow.

Your professional advancement is accelerated by our company-sponsored self-development programs: our full-time, off-the-job Graduate Engineering Training Program and the Tuition Refund Plan for after-hours college study. Engineers are important to all phases of Western Electric's job as manufacturer, purchaser, distributor and installer for the Bell System.

Your professional advancement

Western Electric offers real opportunity. Some 55% of the college graduates in our upper levels of management have engineering degrees. And 7,000 management positions must be filled by newly promoted people in the next ten years. Many of these positions will be taken by Western Electric engineers.

Opportunities spring from the work we do. As the Bell System's manufacturing unit, Western Electric is the world's largest maker of communications equipment. We are equipped to produce some 65,000 different parts which are assembled into a vast variety of apparatus and equipment. Add to this our steady, varied defense assignments, and you see why engineering skill gets top priority here at Western Electric.

CHOOSING a company with which to spend your professional life is one of the most important decisions you have to make. Choose carefully, for your professional advancement and rewards depend to a large degree on the opportunities presented you.

Be sure the company itself is growing on a solid foundation . . . doing important work that has a permanent part in the nation's economy and future. Be sure the company offers challenging work and opportunities in your chosen field . . . for you will be happiest and develop faster doing what you like. Be sure the company you choose is "engineering-minded" . . . and has demonstrated an active interest in the development of its engineers.

Before you decide, look around . . . ask . . . compare. You will find all these opportunities at Western Electric.

Opportunities exist for mechanical, electrical, chemical and civil engineers, and physical scientists. For more information pick up a copy of "Your Opportunity at Western Electric" from your Placement Officer. Or write College Relations, Room 1111D, Western Electric Co., 195 Broadway, New York 7, N. Y. And be sure to sign up for a Western Electric interview when the Bell System recruiting team visits your campus.

Western Electric

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Principal manufacturing locations at Chicago and Oecatur, Ill.; Kearny, N. J.; Baltimore, Md.; Indianapolis, Ind; Allentown and Laureldale, Pa.; Burlington, Greensboro and Winston-Salem, N. C.; Buffalo, N. Y.; North Andover, Mass.; Lincoln and Omaha, Neb.; St. Paul and Duluth, Minn.; Kansas City, Mo.; Columbus, Ohio; Oklahoma City, Okla. and Teletype Corporation, Chicago 14, Ill. and Little Rock, Ark. Also Western Electric Distribution Centers in 32 cities and Installation headquarters in 16 cities. General headquarters: 195 Broadway, New York 7, N. Y.

SLIPSTICK SLAPSTICK

Joe: "What you look so sad for, friend?"

Moe: "I had a terrible argument with my wife. She said she wouldn't speak to me for 30 days."

Joe: "Well then, you should be happy."

Moe: "Hell no; this is the last day."

A lion ate a bull. He felt so good he roared and roared. A hunter heard the roar and killed the lion. The moral of the story is: When you're full of bull, keep your mouth shut.

Then there was the 70 year old man who, when accused by an 18 year old girl of attacking her, felt so proud he pleaded guilty.

And then there was the naive young thing who told the clerk in the maternity shop, "No, Ma'am, I'm not expecting—I'm sure."

And then there was the inebriated EE who was arrested for feeding the squirrels in the park. He was feeding them to the lions.

One flea to another: "I'm saving my money to buy my own dog."

Said the rabbit mother to the rabbit father: "Junior had a great day at school today. He learned to multiply."

Then there was the mother mouse who said to her daughter, "Go ahead and marry that rat if you want to live in a hole the rest of your life."

Jane: "I can marry anybody I please."

Jim: "True, but you don't please anybody."

Doc: "Tell me, why do you have so many boy friends?"

She: "I give up."

Then there was the chemical engineer who wouldn't let his wife feed their kid milk before it went to sleep because he reasoned that the kid would toss from side to side; that milk turns to cheese, cheese turns to butter, butter to fat, fat turns to sugar, sugar turns to alcohol; therefore, the kid would wake up with a hangover.

Then there was the young man who married at an early urge.

My whole trouble is that my brother is an only child.

A college professor wrote his psychiatrist from a resort, "Am having a wonderful time. Wish you were here to tell me why."

A business efficiency expert put the following sign on the wall of a big concern: PUT IT OFF NO LONGER —DO IT NOW. That same day the office boy kissed the secretary, the bookkeeper punched the treasurer in the nose, the porter broke three windows, the salesman burned his sample case, and the cashier left town with $100,000 and the boss' wife.

Three eminent doctors were bragging among themselves one day. Said the first, "I grafted an arm on a fellow and now he plays tennis like a pro." Said the second, "I grafted a leg on a man and now he runs on the Olympic track team." The third took the cake with, "I once grafted a smile on a jackass and now he is a Congressman."

A fast talking salesman was making his pitch to an interested car customer, "Why this baby is so fast, you can leave here now and arrive in Utica by two tomorrow morning." Said the customer, "I can't take it then because what would I do in Utica at two in the morning?"

And there was the heart-rending case of the man who spilt a whole bottle of hair restorer on his head and smothered before he could get to a pair of scissors.

Not to mention the gung-ho young engineer who started at the bottom and stayed there.

A man sat at the bar rail all night and when he was ready to leave crawled up the wall, across the ceiling, down the wall and out the door. One patron asked the bartender, "Isn't that fellow a pretty strange individual?" "Yeah," said the bartender, "he never says goodnight."

And there's always the one about the TV fan who got up one morning, turned on the radio and thought he had gone blind.

A doctor called a man into his office and told him that his wife's mind was completely gone. "I'm not surprised," said the man, "She's been giving me a piece of it every day for the past 22 years."

NEWS IN INDUSTRY

CLIMATE LAB

Dial yourself a teacup size hurricane or the sultry Sahara's arid climate; it's all the same to a comparatively new testing instrument that assists science in knowing more about seed germination, insect control, testing telephones or electrical computers, and hundreds of other diversified subjects. The answers supplied by this instrument can help you in your daily life, and also aid industry produce better and less expensive products in the years to come.

The unique testing instrument is called a Climate-Lab, and is made by the American Instrument Company, Inc., of Silver Spring, Md. This instrument can duplicate and accurately sustain almost any global climatic condition.

The Climate-Lab has a 9.6 cubic foot capacity test chamber which is highly insulated. The entire test chamber is made of stainless steel. This material—about 200 pounds of stainless steel goes into each unit—was chosen because of its non-corrosion properties and its ease of maintenance.

The Climate-Lab conditions the air before it enters the test chamber. Controls on the testing equipment are accurate within plus or minus one per cent relative humidity, and plus or minus one degree Fahrenheit in temperature. A constant control system which records time, temperature and humidity is included.

The Climate-Lab can recreate any climatic condition up to 99 per cent relative humidity and up to 160 degrees Fahrenheit.

Model demonstrating use of Climate-Lab manufactured by American Instrument Co., Inc., of Silver Spring, Md.

SCRAPERS WORK 62% GRADE

Work rubber-tired scrapers on 525 feet of 62% adverse grade? It is possible, and profitably so, when an alert company uses its ingenuity.

Usually it is possible to take the long way around and work an easier grade. The Atkinson Co. was not permitted outside the grade stakes on the reconstruction of 4.4 miles of US 101 from Dyerville to Redcrest, in northern California. This is deep in the heart of the Redwoods, and every attempt is being made to preserve the natural beauty of the virgin forests.

More than 1,400,000 yards, half the total yardage on the job, are being hauled out of this one sidehill cut, 480 feet deep and 1300 feet long, to fill in a river bar for the north approach to the bridge. All the grading on this cut must be completed before the winter rains turn the clay into a quagmire, because a detour around the base of the hill, now extending 2200 feet up the river, must be removed by then to prevent diversion of the flood current against the opposite bank and undercutting some of the giant trees.

To complete the work in time a schedule of 20,000 yards a day from this cut was set up. This schedule is being met by "yarding" 18 Tractor-Scrapers up the 62% slope. Yarding the big scrapers up the hill is unique in itself, but the Contractor's ingenuity continued to pay off in devising a quick, reliable hookup, requiring no manual assistance. To engage a hook, the operator drives up over the hook, then eases back until the loop engages the

Two Caterpillar D 9 tractors open up 525-foot, 62% ramp for towing DW 20 tractor-scrapers up the hill.

hook and a strain is taken on the tow line. A checker quickly inspects the hookup to make sure it is secure and waves the rig on. With a toot of its whistle, the yarder starts reeling the big scrapers up the hill. Each scraper reaches the top of the 525-foot hill in about 3 minutes depending on how much assistance the tractor operator gives. Usually there are two scrapers on the hill, and sometimes three. Good control of the cycle has insured few waits of tow lines.

With more than 500,000 yards moved in this manner, Atkinson experienced only one accident; the hook had apparently not been engaged properly and it disengaged. The scraper plunged to the bottom of the hill, but the operator jumped clear, climbed aboard another DW 20 and went right back up the hill.

NEW BRIDGE UTILIZES ECONOMIES OF HIGH STRENGTH STEEL AND SUBMERGED ARC WELDING

A bridge, presently being built across the Carquinez Strait in California, marks a milestone in the advancement of welded bridge designs. Nearly 30 million pounds of steel, all shop welded, will be used in the superstructure of the four lane highway bridge. Much of the welding is done with a semi-automatic submerged arc welder using standard procedures and 70,000 psi tensile electrode.

Carquinez Bridge, presently under construction, which will link San Francisco Bay area with the Sacramento Valley.

Operator welding H-section member for Carquinez Bridge with Manual Lincolnweld submerged arc welder which deposits ¾ inch fillet welds at speeds in excess of 12 inches per minute.

Extensive use of the high strength steel effected cost savings estimated by the State of California Highway Department at $800,000. This resulted from the substantial weight reduction made possible by the high strength of the steel. The 45,000 psi stress allowed for the "T-1" is 2½ times that permitted for ASTM A-7 steels and nearly twice that for ASTM A-242 steels.

Welded design simplified members to three basic sections: H-sections for tension members, box-sections for members with normal compression, and internally supported box-sections for members with heavy compression.

Three types of submerged arc equipment are used for welding: full automatic, and both mechanized and manual semi-automatic. Though some welds on the heavier box-sections require as many as 38 passes to complete, ⅜ inch fillets make up a large part of the work. Several Manual Lincolnweld units are used on these welds.

The State of California approved all submerged arc procedures for the Carquinez Bridge before construction began. The ½% molybdenum, 70,000 psi tensile, electrode used on the "T-1" provides ample strength for the stresses at the joints where it is used, even though it does not match the high strength of the steel. This judicious use of material produced considerable savings over the cost of depositing a higher strength weld.

How'd you make out in finals?

TAKING ITCH OUT OF POISON IVY

Industries employing men as outdoor workers are reducing one of the chief causes of lost man-hours. They are taking the itch out of ivy poisoning by issuing an immunizer which comes in a one-ounce bottle, enough to last a whole season.

Mass industrial tests over the last four years show that preventive treatment started six weeks before the men might be exposed to poison ivy, oak or sumac, gives 75 to 90 per cent protection from the painful affliction.

The immunizing treatment has been mass tested by medical and safety directors on tree service workers known to be subject to ivy poisoning whose work takes them constantly into areas where exposure is common.

It is so free of adverse effects and so safe to use that it has been given to children who are likely to be exposed to the plants.

In industrial use, safety and medical directors recommend that men start taking the immunizer at least six weeks before they expect to be exposed to poison plants. They take five drops of Oral-Ivy daily in water, milk or fruit juice before breakfast during this pre-exposure immunity build-up period. Then, through the rest of the poison ivy season they take the same dose three times a week to maintain their immunity.

Pump-turbine design is now the work . . . hydraulics, the field . . . of John Jondavitz, BSME graduate of College of City of New York, '52.

Water conditioning chemical, service, and equipment specialist in Houston is new assignment of Arthur Brunn, BS Chem. E., University of Tennessee, '56.

Field sales engineering of America's widest range of industrial products is choice of Roy Goodwill, BSME, Michigan State College, '54.

Recent Training Course Graduates

select wide choice of careers at Allis-Chalmers

Starting up a cement plant in Mexico after coordinating all work on it is latest job of John Gibson, BS Met. E., University of California, '54.

Nucleonics is chosen field of R. A. Hartfield, BME, Rensselaer Polytechnic Institute, '53. Currently he is working on design and development of new nuclear power plant.

THERE'S variety at Allis-Chalmers. Whether you're thinking in terms of types of industries, kinds of equipment, types of jobs, or fields of work, the diversification of Allis-Chalmers provides unsurpassed variety. For example:

Types of jobs	Industries	Equipment	Fields
Research	Agriculture	Tractors	Metallurgy
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Manufacturing	Chemical	Screens	Mechanical Design
Application	Construction	Earth Movers	High Voltage Phenomenon
Sales	Electric Power	Transformers	Stress Analysis
	Mining	Crushers	Nucleonics
	Nuclear Power	Reactors	Electronics
	Paper	Control	Hydraulics
	Petroleum	Pumps	Acoustics
		Motors	Thermodynamics
		Steam Turbines	

An outstanding training program, started in 1904, is designed to help you find the activity within these groupings for which you are best suited. Up to two years of theoretical and practical training are offered. Direct employment at Allis-Chalmers is available for those with sufficient background.

Learn more about Allis-Chalmers and its training program. Ask the A-C district office manager in your area or write Allis-Chalmers, Graduate Training Section, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS

CAN YOU FIGURE IT OUT?

Problem: Determine the digits represented by dots in the multiplication example at the right.

```
  .1...
x  417
-------
  .....
 .....
.....
-------
9...057
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*Solution at bottom of page

Robert A. Pike tells what it's like to be . . . and why he likes being . . . a Research Physicist with IBM.

FIGURING OUT A CAREER?

Selecting a career can be puzzling, too. Here's how Bob Pike found the solution to *his* career problem—at IBM:

"I became interested in computers and transistors at college," Bob Pike recalls. "Upon graduation, I naturally turned to the computer field. IBM, as a leader in the field, looked like a good place for me." After a training period, he joined the Semi-Conductor Device Development Group in Research. Promoted to Associate Physicist soon afterward, his present assignment is leading a group of technicians in fabricating high-frequency, high-power PNP drift transistors. "These will be used as core drivers in a high-speed memory array," he says. His future? At the rate IBM and the electronic computer field are expanding, Bob Pike foresees excellent opportunity for advancement in the area of his choice.

• • • •

There are many excellent opportunities for well-qualified engineers, physicists and mathematicians in IBM Research, Development and Manufacturing Engineering. Why not ask your College Placement Director when IBM will next interview on your campus? Or, for information about how your degree will fit you for an IBM career,

JUST WRITE TO:

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***SOLUTION**

Let the multiplicand be *D*1*CBA*. Since the units digit in the answer is 7, the only value possible for *A* is 1. This also fixes one of the dots in the hundreds column as a 1; to get a 5 in the answer, the other dot must be a 4. Hence *B* can only be a 2. Similar reasoning will determine *C* as 9 and *D* as 2. Answer = 21921.

You say you are an American engineer and you want to drill for oil in the South China Sea?

We only have coconut oil in Waikiki.

I don't care what you saw, Monsieur, there are no oil wells in Texas.

We only have coconut oil in Tahiti.

Forget your oil well, senor—in Rio we just Mambo.

You say you are an American engineer and you want to drill for oil at the North Pole?

MECH - MISS

Pardner—in Texas we drill for our own oil.

PHOTO SERIES CONCEIVED AND EXECUTED BY TOM BEALE.

Our lovely Mech Miss for May is Miss Roberta Pampilio of Arlington, Va. Roberta is 21 years old, 5' 3" and 110 pounds. She is a Zeta Tau Alpha and is a junior majoring in Commercial Art.

PHOTOGRAPHY AT WORK
No. 33 in a Kodak Series

The Army's first operational rotor-tip propelled jet helicopter—built by Hiller.

The camera has caught the fuel spray pattern within the rear end of the ram-jet engine even though passing by at about 450 miles per hour.

Project:

Inspect rotor tip jets for a whirlybird

Hiller Helicopters wanted facts on the fuel spray pattern of a ram-jet engine whirling at speeds up to 700 feet per second. Photography got the job.

WHEN HILLER HELICOPTERS of Palo Alto, Cal.—a pioneer in vertical take-off aircraft—developed a rotor-tip ram-jet engine, they knew the fuel spray would be subject to high air velocity and centrifugal force up to 1200 G's. Would the fuel spray be deflected outward and cause the jet to lose thrust? They wanted to know. So they set up the camera with its fast eye to catch what otherwise couldn't be seen. And they learned the right angle of air intake and nozzle to obtain the greatest power.

Using photography in research is an old story with Hiller—just as familiar as using it for improving public relations. It's an example of the way photography plays many important roles in modern-day industry.

In whatever work you do you will find that photography will play a part in improving products, aiding quality control and increasing sales.

This is all the human eye could have seen of the whirling ram-jet engine as camera takes its picture.

One of a series*

Interview with General Electric's
W. Scott Hill
Manager—Engineering Recruiting

Qualities I Look For When Recruiting Engineers

Q. Mr. Hill, what can I do to get the most out of my job interviews?

A. You know, we have the same question. I would recommend that you have some information on what the company does and why you believe you have a contribution to make. Looking over company information in your placement office is helpful. Have in mind some of the things you would like to ask and try to anticipate questions that may refer to your specific interests.

Q. What information do you try to get during your interviews?

A. This is where we must fill in between the lines of the personnel forms. I try to find out why particular study programs have been followed, in order to learn basic motivations. I also try to find particular abilities in fields of science, or mathematics, or alternatively in the more practical courses, since these might not be apparent from personnel records. Throughout the interview we try to judge clarity of thinking since this also gives us some indication of ability and ultimate progress. One good way to judge a person, I find, is to ask myself: Would he be easy to work with and would I like to have him as my close associate?

Q. What part do first impressions play in your evaluation of people?

A. I think we all form a first impression when we meet anyone. Therefore, if a generally neat appearance is presented, I think it helps. It would indicate that you considered this important to yourself and had some pride in the way the interviewer might size you up.

Q. With only academic training as a background, how long will it be before I'll be handling responsible work?

A. Not long at all. If a man joins a training program, or is placed directly on an operating job, he gets assignments which let him work up to more responsible jobs. We are hiring people with definite consideration for their potential in either technical work or the management field, but their initial jobs will be important and responsible.

Q. How will the fact that I've had to work hard in my engineering studies, with no time for a lot of outside activities, affect my employment possibilities?

A. You're concerned, I'd guess, with all the talk of the quest for "well-rounded men." We do look for this characteristic, but being president of the student council isn't the only indication of this trait. Through talking with your professors, for example, we can determine who takes the active role in group projects and gets along well with other students in the class. This can be equally important in our judgment.

Q. How important are high scholastic grades in your decision to hire a man?

A. At G.E. we must have men who are technically competent. Your grades give us a pretty good indication of this and are also a measure of the way you have applied yourself. When we find someone whose grades are lower than might be expected from his other characteristics, we look into it to find out if there are circumstances which may have contributed.

Q. What consideration do you give work experience gained prior to graduation?

A. Often a man with summer work experience in his chosen academic field has a much better idea of what he wants to do. This helps us decide where he would be most likely to succeed or where he should start his career. Many students have had to work hard during college or summers, to support themselves. These men obviously have a motivating desire to become engineers that we find highly desirable.

Q. Do you feel that a man must know exactly what he wants to do when he is being interviewed?

A. No, I don't. It is helpful if he has thought enough about his interests to be able to discuss some general directions he is considering. For example, he might know whether he wants product engineering work, or the marketing of technical products, or the engineering associated with manufacturing. On G-E training programs, rotating assignments are designed to help men find out more about their true interests before they make their final choice.

Q. How do military commitments affect your recruiting?

A. Many young men today have military commitments when they graduate. We feel it is to their advantage and ours to accept employment after graduation and then fulfill their obligations. *We have a limited number of copies of a Department of Defense booklet describing, in detail, the many ways in which the latter can be done. Just write to Engineering Personnel, Bldg. 36, 5th Floor, General Electric Company, Schenectady 5, N. Y.* 959-8

***LOOK FOR other interviews discussing: • Advancement in Large Companies • Salary • Personal Development.**

GENERAL ELECTRIC